

NEW TAXA OF THISTLES (*CIRSIUM*; ASTERACEAE) IN UTAH

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ABSTRACT.— Described are several new taxa of the genus *Cirsium* that occur in the state of Utah: *C. eatonii* (Gray) Robins. var. *harrisonii* Welsh; *C. eatonii* var. *murdockii* Welsh; *C. oenbeyi* Welsh; *C. scariosum* Nutt. var. *thorneae*; and *C. virginensis* Welsh.

The thistles of Utah have long constituted one of the most difficult problems in the plant taxonomy of the state. Differences between taxa are often obscured by inter-specific hybridization. Hybridization is not only between closely related entities, but occurs between species that have been placed in different sections of the genus. The problems of interpretation are compounded by the lack of a modern comprehensive treatment of our North American species. Previous treatments were based on few specimens and could not account for the variability as perceived by contemporary workers. Collectors have tended to avoid this genus and its relatives because of their spinose and bulky nature. Only dedicated persons will trouble themselves with the specimens, which remain as problems even after they are deposited in herbaria. The pappus tends to expand, even in dry specimens, and the parachutelike apparatus floats about the herbarium every time someone moves the specimens from case to case or elsewhere.

Diagnostic criteria are, and have been, based on features that are inconstant. Features of the involucre bracts have been widely used to distinguish taxa in the group. Some of those features are better than others, including shape and dorsal surface texture. But others, including degree of development of the glandular dorsal crest and the presence of pubescence on the dorsal surface, have not proved reliable.

The following taxa have been distinguished while attempting to provide a treatment of the Utah thistles. The problems of our Utah materials often extend beyond the state, and I have had to examine materials from the surrounding states. The entire treatment will appear as a portion of the paper dealing with the Asteraceae (Compositae), which is in progress.

Cirsium eatonii (Gray) Robins. Eaton Thistle. [*Carduus eatonii* Gray]. Three more or less distinctive varieties are present.

- 1. Involucre bracts copiously gray- to brown-villous with long multicellular hairs; corollas ocreoleucous; plants of the Uinta Mts. from Lake Fork eastward ..
..... *C. eatonii* var. *murdockii*
- Involucre bracts merely white-tomentose or rarely with short multicellular hairs; corollas mainly pink or rose; plants of western Uinta Mts., and elsewhere 2
- 2(1). Involucre bracts commonly suffused with dark purple; involucre not obscured by outer spinose bracts; plants of the Tushar Mts.
..... *C. eatonii* var. *harrisonii*
- Involucre bracts green or variously purplish; involucre with copious pinnate spines, mainly obscuring the surface of inner bractlets; plants of western Uinta and Wasatch mountains, and Great Basin ranges *C. eatonii* var. *eatonii*

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Var. *harrisonii* Welsh var. nov. Similis *C. eatonii* var. *eatonii* sed bracteis atropurpureis suffusis et spinis paucioribus. **TYPE.**— USA. Utah: Piute Co., Tushar Mts., T28S, R4W, S8, alpine meadow, talus slope, igneous gravel, 3416 m elev., 16 Aug. 1978, Welsh & Henroid 18084 (Holotype BRY). Additional specimens: Utah. Piute Co., Tushar Mts., 9 mi due W Marysvale, T27S, R5W, S35, 3050 m elev, 27 July 1976, Welsh et al. 14030 (BRY); do, T27S, R5W, S1, 28 July 1967, Welsh et al. 14050 (BRY); do, 2989 m, 25 July 1978, Welsh et al. 17738 (BRY); do, T28S, R5W, S2, 17 Aug. 1978 (BRY). The few specimens of the Tushar Mountains phase seem to average smaller than in the type variety. They are isolated from the body of the species in the islandlike Tushar Mountains. The variety is named in honor of Professor Bertrand F. Harrison, teacher, collector, and authority on Utah grasses.

Var. *eatonii* [*C. eriocephalum* var. *leiocephalum* D. C. Eaton]. This is the basionym for *C. eatonii* in a strict sense, which was renamed by Gray in honor of D. C. Eaton, who collected with Sereno Watson in 1869. The lectotype came from the head of the Bear River, in Summit County (Watson 691, 1869 US!), with syntypical material being taken under the same number in Cottonwood Canyon (now Salt Lake County). Lodgepole pine and spruce communities upwards into alpine tundra at 2375 to 3420 m in Duchesne, Juab, Salt Lake, Summit, Tooele, and Weber counties; Nevada and Colorado. Specimens from the Deep Creek Mountains have few lateral spines on the outer bracts and approach *C. clavatum* in technical features. More material is needed to determine their status and relationships.

Var. *murdockii* Welsh var. nov. A *C. eatonii* var. *eatonii* differt in bracteis copiose griseis ad bruneis villosis pilis multicellulosis. **TYPE.**— USA. Utah: Duchesne Co.; Uinta Mts., Yellowstone Canyon, T4N, R5W, S25, 3355 m elev., Precambrian quartzite, 2 Aug. 1980, Welsh & Neese 19935 (Holotype BRY). Additional specimens: Utah. Duchesne Co.; Uinta Mts., Chepeta Lake vicinity, T5N, R1W, S28,29,32,33, spruce-lodgepole pine forest, 3233 m elev., 3 Aug 1980, Neese & Welsh 9455 (BRY); Chain Lake Basin, T4N, R4W, S23, 3377 m elev., 16 July 1979, Welsh

et al. 19048 (BRY). Uintah Co., Uinta Mts., Leidy Peak, T1S, R19E, S6, 3660 m elev., Neese & Peterson 6395 (BRY); do, 30 July 1971, Waite 299 (BRY); do, White Rocks drainage, 17 July 1976, Goodrich 6478 (BRY). The plants grow in talus and rock stripes at 3230 to 3660 m in Daggett, Duchesne, and Uintah counties; endemic. The variety is named in honor of Professor Joseph Richard (Dick) Murdock, teacher and collector, whose ecological work on Oke Doke (Fifth Chain Lake) in the Uinta Mountains is classic. This variety has been regarded as constituting a portion of *C. tweedyi* (Rydb.) Petrak. That entity was reviewed by Moore and Frankton (1965) and was mapped to include northeastern Utah in its range. No specimens were cited from Utah, however. I have seen the type of that taxon, and other material within its range in northwest Wyoming, and they differ in pubescence of involucre bracts being merely white tomentose along the margins.

***Cirsium ownbeyi* Welsh sp. nov.** Ownbey Thistle. Perennial herbs from caudex and taproot, the caudex with marcescent dark brown leaf bases; leaves of basal rosettes 5–13 cm long, 1.5–3 cm wide, tripinnatifid, green on both sides, sparingly tomentose along lower side of midrib; cauline leaves with vesture and lobing like the basal; stems 5–7 dm tall, winged-decurrent, sparingly tomentose; involucre 1.8–2.5 cm high, 1.5–2.5 cm wide, the outermost bracts more or less pinnately spinose, lance-attenuate, smooth medially, the dorsal ridge not well developed, not scabrous, sparingly tomentose along margins, the inner more or less contorted apically; spines 3–8 mm long; corollas rose-pink.

Similis *Cirsio clavato* sed in caulibus alatis et foliis tripinnatifidis differt. **TYPE.**— USA. Utah: Uintah County, Horse Trail Canyon, T4S, R24E, S4, juniper-sagebrush community, 1678 m elev., 2 July 1955, Welsh 343 (Holotype BRY). Additional specimens: Utah. Daggett County, Crouse Canyon, T1N, R25E, S2, 15 June 1978, Neese 5673 (BRY). The Ownbey thistle is known from juniper, sagebrush, and riparian communities at 1678 to 1891 m in Daggett and Uintah counties. The species is named in honor of Dr. Gerald B. Ownbey, specialist in *Cirsium*, who first

recognized the distinctive nature of this species. Relationships of the Ownbey thistle apparently lie with *C. eatonii*.

Cirsium scariosum Nutt. Meadow Thistle. [*Carduus lacerus* Rydb., type from near Midway; *Carduus olivescens* Rydb., type from

the Aquarius Plateau; *Cirsium acaule* var. *americanum* Gray; *Cnicus drummondii* var. *acaulescens* Gray; *C. foliosum* authors, not T. & G.; *C. drummondii* authors, not T. & G.]. Our specimens fall into two rather distinctive varieties.

1. Heads 25–35 mm high, 35–80 mm wide; inner bracts slender, sometimes contorted, not especially dilated; plants mainly 6–12 dm tall *C. scariosum* var. *thorneae*
 — Heads 22–30 mm high, 20–40 mm wide; inner bracts often dilated or contorted, sometimes fimbriate; plants 0–6 dm tall *C. scariosum* var. *scariosum*

Var. *scariosum* [*Cirsium acaule* var. *americanum* Gray]. This taxon, as here interpreted, consists of an amazingly diverse assemblage that has passed under a series of names including those cited above. Saline seeps and salt marshes, streamsides, terraces, and other meadowlands at 1310 to 3175 m in Carbon, Duchesne, Emery, Garfield, Juab, Millard, Salt Lake, Sanpete, Sevier, Summit, Tooele, and Utah counties; British Columbia to Montana, south to California, Arizona, and Colorado. This phase of *C. scariosum* has passed under the names *C. acaulescens* (Gray) Schum., *C. coloradoense* (Rydb.) Cockerell; *C. tioganum* (Congdon) Petrak, *C. drummondii* T. & G., and *C. foliosum*. Nomenclature is still unclear, and more work is indicated. Our highly variable material is transitional from acaulescent to caulescent within populations, with stems, when present, that are fleshy and edible. This is our common thistle of meadowlands, and it is unfortunate that nomenclatural entanglements have not allowed selection of an unequivocal name.

Var. *thorneae* Welsh var. nov. A *C. scarioso* var. *scarioso* in capitulis majoribus et caulibus longioribus differt. TYPE.—USA. Utah: Piute Co., margin of Otter Creek, Grass Valley, 6.5 mi n of Angle, T28S, R1W, S30, Volcanic sediments, 2013 m elev., 11 Aug. 1976. S. L. & S. L. Welsh 14369 (Holotype BRY). Additional specimens: Utah. Beaver Co., Needle Range, Vances Spring, T28S, R18W, S17, 7 July 1976, Welsh & Holmgren 13903 (BRY); do, Wah Wah Spring, 28 Aug. 1980, Welsh et al. 20157. Garfield Co., Pine Lake, 27 July 1977. Neese & White 3830 (BRY). Iron Co., Cedar Mt., near Navajo Lake, 28 July 1971, Higgins 4669 (BRY). Kane Co., along Skutumpa Creek, T40S,

R41/2W, S76, 4 Aug. 1976, Welsh et al. 14250 (BRY). Millard Co., Pavant Mts., T21S, R21/2W, S2, 15 Aug. 1978, Welsh & Henroid 18031 (BRY). Piute Co., 1 mi E of Kingston, 25 July 1964, Welsh & Moore 3352 (BRY); do, 2 mi W Kingston, 20 Aug. 1976, Welsh & Taylor 14443 (BRY). In addition to the features noted above, the cauline leaves are thick, with coarse veins, and spines 8–35 mm long; endemic.

Cirsium virginensis Welsh sp. nov. Virgin Thistle. Perennial(?) herbs from taproots; leaves of basal rosettes 6–35 cm long, 1–5 cm wide, unlobed, pubescent like the cauline ones, with spines 1–4 mm long; stems 6–15 dm tall, tomentose, winged by definitely decurrent leaf bases; cauline leaves 1.5–15 cm long or more, sinuate-dentate to pinnatifid, whitish tomentose on both sides, or greenish above, often reduced to spiney bracts upwards; involucre 13–20 mm tall, 12–32 mm wide, the bracts ovate-lanceolate to narrowly lanceolate, brownish to straw colored, or often suffused with purple, tomentose marginally (or overall), the outer not especially reflexed, the inner serrulate or entire, smooth medially, the glandular dorsal ridge more or less developed, the apical portions of the inner often contorted; spines 2–6 (8) mm long, yellowish; corollas pink to lavender (or white?). Saline seeps and stream terraces at 850 to 950 m in Washington Co.; Arizona. The small heads and long decurrent leaf bases are diagnostic.

Ab *Circio undulato* distinguibili in foliis non lobato et alato decurrenti et capitulis parvioribus. TYPE.—USA. Utah: Washington Co., St. George, T42S, R15W, S19, hanging garden in sandstone cliffs, at 900 m elev, 13 June 1982, S. L. Welsh 21234 (Holotype

BRY; Isotypes NY, CAS, ISC, MO, POM, UT, UTC, RM). Additional specimens: Utah. Washington Co., St. George, 16 Sept. 1935, Galway 8470 (BRY;US); do, 30 June 1947, Galway 2214G (US); do, 3 June 1938, Galway sn (BRY); do, Higgins 17 Aug. 1947, Higgins 10998 (BRY). Washington Co., Beaverdam Mts., at jct of Hwy 91, and Gunlock Road, in field north of the road, T41S, R17W, S28, at ca 975 m elev, 19 Aug. 1966, Higgins 836. Arizona: Mohave Co., I-15 river bridge, near Littlefield, 27 Aug. 1980, Bundy 200 (BRY).

Although this handsome thistle is compared to *C. undulatum* in the diagnosis, its relationships are unknown. It does not appear to be closely related to other species in the complex groups represented in our area.

LITERATURE CITED

- MOORE, R. J., AND C. FRANKTON. 1965. Cytotaxonomy of *Cirsium hookerianum* and related species. *Canad. J. Bot.* 43: 597-613.
- PETRAK, F. 1917. Die nordamerikanischen Arten der Gattung *Cirsium*. *Beih. Bot. Centralbl.* (Abt. 2), 35: 223-567.